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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/620,073	07/20/2000	David R. Hall		3609

7590

10/02/2003

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EXAMINER

WONG, ALBERT KANG

ART UNIT

PAPER NUMBER

2635

DATE MAILED: 10/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/620,073

Applicant(s)

HALL ET AL.

Examiner

Albert K Wong

Art Unit

2635

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 July 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 July 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

Art Unit: 2635

1. This Office action is in response to the application filed July 20, 2000. Claims 1-16 are pending.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, on line 15, it is not clear which external face is being referred to since there is one on the box end and one on the pin end. The term data acquisition appears to be inconsistent. Power or data is transmitted via the means located in the pipe end that form the joint. The data acquisition means maybe merely a sensor and thus, unlike the transmission of power and data, are not precisely tuned. The data acquisition means could also be interpreted as a receiver capable of receiving signals from the data transmitter.

Regarding claim 3, it appears that applicant intends to recite that the pipe is connected to one member of the group instead of the entire group.

Regarding claim 5, it is not clear which drill pipe is being referred to. It appears that applicant intended to recite "either drill pipe.

Regarding claims 9 and 10, the reference to elements of the pin end and the box end and the proportion to sustain a nominal makeup torque has been recited in claim 1 and appear to be redundant.

Regarding claim 16, the reference to a data acquisition means and the precise tuning of the means is unclear since only the transmitters are coupled and need to be tuned. The data

Art Unit: 2635

acquisition means appears to only be a sensor and thus is not tuned. However, the data acquisition means may be interpreted as a receiver that receives data from the transmission means.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 5, 9-10, and 15-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Howard 4,884,071.

Regarding claim 1, Howard teaches the a first drill pipe with a box end and a second drill pipe with a pin end in figure 6. The external face, counterbore, tapered thread, internal shoulder, nose section, tapered thread, base section, and external shoulder are also shown in the drawing. Although both ends of the drill pipes are not shown it is inherent that pipes have a box and a pin end to allow interconnection between numerous sections. The gap between the box and the pin sections show that the distance between the internal shoulder and external face of the box end is precisely greater than the distance between the external face and the shoulder of the pin end. The means for data transmission is shown as items 331 and 329 and are in precise reference to the ends. It is clear that when the joint is made up the box and the pin ends are in repeatable predetermined proximity which permits precise tuning.

Regarding claim 2, the pipes are connected together for a drill string for and oil well as shown in Figure 4.

Regarding claim 3, see col. 12, lines 30-60.

Art Unit: 2635

Regarding claim 5, since the pipe receives data signals and transmits it to an adjoining section it contains data acquisition and transmission means.

Regarding claims 9 and 10, the means for data transmission is located within the nose section or the box end of the drill pipe as shown in Figure 6. The sections are of such proportion to sustain a nominal make up torque.

Regarding claim 15, col. 11 teaches the use of electromagnetism as a data transmission means.

Regarding claim 16, this claims is similar to claim 1 with the addition of tapered interlocking thread. Figure 6 shows tapered interlocking thread. The other limitations have been addressed in claim 1.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 4, 6-8, and 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Howard.

Regarding claim 4, when the joint in Howard is made up with nominal torque, the distance between the internal shoulder of the box end and the external face of the pin end are not precisely shown. However, it is known that the distance between the communication unit must be in close proximity. A Hall sensor would couple signals strongly when it is close to the transmitter. The range of distance between .003 and .010 inches would certainly be within a

Art Unit: 2635

proper design range. It would have been obvious to select the claimed range of distances because the device in Howard would require that the separation be small for the transmission elements to work well.

Regarding claim 6, the distance between the means when the joint is made up under nominal torque is an obvious design choice. The joint must place the communication means within close proximity to operate.

Regarding claims 7 and 8, it would have been obvious to create a pipe where the joint strength is significantly greater than the makeup torque to ensure reliable connection. The selection of a particular factor of safety is an obvious design choice since it is not critical to the invention.

Regarding claims 11 and 12, Howard does not disclose that the joint is capable of sustaining additional torque that is 1.25 times the nominal amount. It is conventional to design fittings that exceed the nominal ratings to ensure reliability under all conditions. It would have been obvious to select any factor of safety to ensure that the joint does not fail when accidentally or intentionally over torqued.

Regarding claim 13, it is clear that the distance between the means for transmission decreases when the torque is increased and that there must remain a gap so that the transmission means is not shorted out. The selection of a particular gap at a particular torque is considered an obvious since the gap must be sufficient to permit communication at all contemplated torque levels.

Regarding claim 14, col. 13 teaches the use of a temperature sensor. A thermocouple is a temperature sensor. It would have been obvious to use any suitable temperature sensor to sense

Art Unit: 2635

temperature. Further, col. 15 teaches the sensing of various conditions within a wellbore.

Although the specific sensor type is not recited, it is understood by one of ordinary skill in the art at the time of the invention that the conditions sensed are done by the specific sensors recited in the claims of the instant application.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The applied prior art should not be considered the only relevant art. For example, van der Graaf teaches another example of communication via drill string joints comprised of box and pin ends.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Albert K Wong whose telephone number is 703-305-8884. The examiner can normally be reached on M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Horabik can be reached on 703-305-4704. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.



Albert K. Wong  
September 24, 2003